REMARKS

Applicants respectfully traverse and request reconsideration.

Amendments to the Written Description

Paragraphs 13 and 16 have been amended to correct typographical errors. No new matter has been entered.

Claim Amendments

Claims 1, 3, 6-7, 10-11, 14 and 16 have been amended, claim 8 has been cancelled without prejudice, and new claims 17-19 have been added. . The claim amendments to claims 3, 6, 10 and 16 remove the phrase "the step of" or other similar language. The claim amendments to claims 1 and 11 add the phrase, "identified as geometry whose visibility status is desired" to the previously added limitation "wherein the boundary volume object comprises a geometric representation of a specific object." The claim amendments to claim 7 adds the subject matter from previously-presented (and presently cancelled) claim 8 and further adds the phrase, "identified as geometry whose visibility status is desired" in the manner described above. The phrase "identified as geometry whose visibility status is desired" added to claims 1, 7 and 11 has support in at least in paragraph 15 of Applicants' originally-filed disclosure. Accordingly, no new matter is believed to have been added.

Claim Rejections

Claims 1-16 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,577,317 B1, Duluk, Jr. et al. ("Duluk"). Duluk appears to be directed to an apparatus and method for geometry operations in a 3D-graphics pipeline that includes a block for performing transformations (*see* Title, Abstract) where clipping appears to be performed only against non-visible volumes that appear to relate to the size of a screen and/or the angle from which the animation (i.e., graphics) presented on the screen can be viewed by a user.

The Examiner notes that part of the graphics pipeline described by Duluk includes a geometry block 842 that appears to transform incoming graphics primitives into a uniform coordinate space called a world space. (Office action, p. 3, FIG. 3, Col. 6, ll. 38-3). The geometry block 842 then appears to clip the primitives to the viewing volume called a frustum. Duluk teaches that "[i]n addition to the six planes that define the viewing volume (left, right, top, bottom, front and back, the Subsystem provides six user-definable clipping planes." (FIG. 3, Col. 6, ll. 38-43). More specifically, Duluk teaches that the component of the geometry block 842 that performs this clipping is the clipping unit 230 that clips primitives against both user-defined clip planes and the view volume planes and sends the clipped primitives to the format sub-unit 233. (Col. 22, ll. 44-48).

Duluk's Figure 1 illustrates the concept of a view volume and its associated viewing plane. The viewing plane appears to be defined as having the same size as the screen and/or is related to the angle from which a user can see the animation presented on the screen (i.e., from the view point). This is supported at least in column 3, lines 42-45 where Duluk explains a generic, high-level graphics pipeline and the step of clipping. According to Duluk, "clipping [] deletes any portion of the polygon that is outside of the view volume because that portion would not project within the rectangular area of the viewing plane." Duluk further appears to provide for the concept of a user-defined viewpoint by stating that "[i]nteractive 3D computer graphics allows a user to change his viewpoint or change the geometry in real-time, thereby requiring the rendering system to create new images on the fly in real time." (Col. 2, ll. 12-15). Accordingly, it appears that the term "user-defined clip planes" (presumably left, right, top, bottom, front and back) are those clip planes associated with a user-defined viewpoint for use in interactive 3D computer graphics. For this reason, Duluk appears to be limited to clipping against viewing

volumes associated with parameters that define what and from which angle animation (i.e., graphics) is displayed on the screen. In other words, the viewing volumes are not visible themselves.

Independent Claims

Newly amended claim 1 requires that the method for object based visibility culling includes, among other things, "comparing each of the plurality of draw packets to a bounding volume object, wherein the bounding volume object comprises a geometric representation of a specific object <u>identified as geometry whose visibility is desired</u>". (emphasis added). For example, the bounding volume object may be a <u>window,</u> a <u>doorway,</u> or any other suitable portal through which viewing definitions may be defined. (*See e.g.,* Written Disclosure, ¶ 11). Using a bounding volume object as claimed may allow one to determine, for example, if a wall having a visible characteristic on it may be visible through a doorway in a graphic output. (*See e.g.,* Written Description, ¶ 4). Applicants are unable to find the above highlighted limitation of claim 1 in either the current Office action or in any cited portion of Duluk. As noted above, Duluk appears to be silent as to this limitation because it appears to be limited to culling based on a viewing volume. Although the viewing volume may be user-defined (by way of user-defined planes), the viewing volume and/or user-defined clipping planes do not represent geometry whose visibility is desired. Instead they appear to relate to or define the actual display parameters (e.g., size, angle of presentation of animation displayed thereon, etc.). For this reason, Applicants respectfully submit that the Office action's rejection fails to teach each claim limitation. For at least this reason, claim 1 is believed to be in proper condition for allowance.

Claims 7 and 11 contain the same or similar limitations as quoted above with respect to claim 1 and are therefore presented for allowance for the same or similar reasons.

New claim 17 contains the same or similar limitations as claim 1. For this reason alone, claim 17 is believed to be allowable over Duluk. New claim 17 also adds that the geometric representation of the specific object is a low resolution model of the specific object that is rendered prior to a detailed model of the specific model. Applicants are unable to find any teaching of this limitation in Duluk for at least the reasons articulated above; namely, Duluk appears to be limited to culling based on a viewing volume. This reason also supports the allowability of new claim 17.

Dependent Claims

Claims 2-6, 9-10, 12-16, and 18-19 are each dependent upon an allowable base claim. For at least the reasons provided above with respect to claims 1, 7 and 11, these dependent claims are also believed to be in condition for allowance.

Accordingly, Applicants respectfully submit that the claims are in condition for allowance and that a timely Notice of Allowance be issued in this case. The Examiner is invited to contact the below-listed attorney if the Examiner believes that a telephone conference will advance the prosecution of this application.

Respectfully submitted,

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